THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 17

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ALEXANDER SHUSTOROVICH, EUGENE SHUSTOROVICH, RICHARD MONTANO, KONSTANTIN SOLNTSEV, YURI BUSLAEV, VENIAMIN KALNER, NIKOLAI MOISEEV and ALEKSANDR BRAGIN

Appeal No. 96-0088
Application No. 08/038,426[1]

ON BRIEF

Before GARRIS, OWENS and LIEBERMAN, Administrative Patent Judges.

LIEBERMAN, Administrative Patent Judge.

DECISION ON APPEAL

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[1] Application for patent filed March 29, 1993.

This is an appeal under 35 U.S.C. § 134 from the final rejection of claims 1 and 4 through 27. These are all the claims remaining in the application.

THE INVENTION

Appellants' invention is directed to a gasoline additive. The additive constitutes at least one compound characterized by direct solubility in gasoline at specific concentrations. The gasoline additive is further characterized by the capability of deposition subsequent to a combustion chamber and the capability of acting as at least one compound of a three-way catalyst to improve the oxidation of CO, unburned hydrocarbons and reduction of nitrogen oxides.

THE CLAIMS

Claims 1 and 23 are illustrative of appellants' invention and are reproduced below.

1. A gasoline additive for the three-way catalytic conversion of gasoline combustion engine emission, the additive comprising at least one compound of a three-way metal catalyst selected from the group consisting of noble metals and non-noble metals, wherein each noble metal catalyst is directly soluble in gasoline in a concentration of about 0.01 to about 10 mg/l and each non-noble metal catalyst is directly soluble in gasoline in a concentration of about 10 to about 100 mg/l, the metal catalyst of the additive being capable of being deposited on a surface of a catalytic vessel located downstream of a combustion chamber and of effecting simultaneous oxidation of carbon monoxide and unburned hydrocarbons and reduction of nitrogen oxides.

23. A method for converting emissions from a gasoline internal combustion engine having an exhaust system for

receiving and expelling said emissions, comprising the steps of:

forming an additive for the three-way catalytic conversion of gasoline combustion engine emission, the additive comprising at least one compound of a metal catalyst selected from the group consisting of noble metals and non-noble metals capable of effecting said conversion, wherein each noble metal catalyst is directly soluble in gasoline in a concentration of about 0.01 to about 10 mg/l and each non-noble metal catalyst is directly soluble in gasoline in a concentration of about 10 to about 100 mg/l;

dissolving at least a portion of said additive in gasoline; and

feeding the gasoline having said additive dissolved therein to the internal combustion engine,

entraining the metal catalyst in emission fumes from the engine,

depositing the metal catalyst on a surface of a catalytic vessel located downstream of the combustion chamber;

simultaneously oxidizing carbon monoxide and unburned hydrocarbons, and reducing nitrogen oxides in the catalytic vessel by contacting the emissions and the deposited metal.

THE REFERENCES OF RECORD

As evidence of obviousness, the examiner relies upon the following references of record.

Lyons et al. (Lyons)	2,086,775	Jul. 13, 1937
Robinson et al. (Robinson ‘017)	4,382,017	May 3, 1983

Robinson (Robinson ‘483)	4,475,483	Oct. 9, 1984
Reinhard et al. (Reinhard)	4,517,926	May 21, 1985
Bowers et al. (Bowers ‘302)	4,752,302	Jun. 21, 1988
Baird, Jr. (Baird)	4,787,969	Nov. 29, 1988
Henk et al. (Henk)	4,868,148	Sep. 19, 1989
Bowers et al. (Bowers ‘050)	4,891,050	Jan. 2, 1990

THE REJECTIONS

Claims 3, 19, 23 and 25 stand rejected under 35 U.S.C. § 112, first paragraph, for failing to enable any person skilled in the art to make and use the invention.

Claims 1 and 4 through 27 are rejected under 35 U.S.C. § 112, second paragraph, for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention.

Claims 1, 4, 5, 7, 16, 23 and 27 stand rejected under 35 U.S.C. § 102(b) as being clearly anticipated by Lyons.

Claims 1, 4 through 9, 16, 23 and 27 stand rejected under 35 U.S.C. § 102 (b) as being anticipated by Bowers ‘302.

Claims 1, 4, 5, 16, 18, 23 and 27 stand rejected under 35 U.S.C. § 102(b) as being clearly anticipated by Bowers '050.[2]

Claims 1, 4 through 12, 14, 16 and 23 stand rejected under 35 U.S.C. § 102 (b) as being clearly anticipated by Robinson '483.

Claims 1 and 4 through 14, 16, 18 through 21, 23 through 25 and 27 stand rejected under 35 U.S.C. § 103 as being unpatentable over Bowers '050, in view of Henk, Robinson '483, Robinson '017, Reinhard and Baird.

OPINION

A. The Rejections under 35 U.S.C. § 112

Any analysis of the claims for compliance with 35 U.S.C. § 112 should start with the second paragraph, then proceed with the first paragraph. In re Angstadt, 537 F.2d 498, 501,

[2] Although the statement of rejection in the Answer lists claim 17 rather than claim 27, the examiner presumably means to include claim 27 not 17 in this rejection. Claim 17 was indicated as containing subject matter allowable over the art of record and stands rejected only under 35 U.S.C. § 112, second paragraph. Claim 27 was included in the final rejection, dated August 17, 1994, Paper No. 9. Appellants likewise include claim 27 in the argument presented in the Brief with respect to the rejection over Bowers '050. It appears that the examiner's omission was typographical. Accordingly, we consider claim 27 to be included in the rejection.

190 USPQ 214, 217 (CCPA 1976), In re Moore, 439 F.2d 1232, 1235, 169 USPQ 236, 238, (CCPA 1971).

The legal standard for definiteness under the second paragraph of 35 U.S.C. § 112 is whether a claim reasonably apprises those of ordinary skill in the art of its scope. In re Warmerdam, 33 F.3d 1354, 1361, 31 USPQ2d 1754, 1759 (Fed. Cir. 1994). The first inquiry is to determine whether the claims set out and circumscribe a particular area with a reasonable degree of precision and particularity.

The examiner lists several different terms regarded as being indefinite. Additionally certain limitations omitted from the claimed subject matter are said to result in claims which are indefinite. These terms include, “three way catalytic conversion,” “noble metals,” “non noble metals,” “ligand”, “ionic structure or chemical names.” The examiner’s position is that these terms are broader than the disclosure, Answer, page 8. However, breadth itself is not indefinite. In re Gardner, 427 F.2d 786, 788, 166 USPQ 138, 140 (CCPA 1970). The examiner has failed to establish with respect to any one of these terms or any omission of limitations that one

of ordinary skill in the art would not be apprised of the scope of the claims containing these phrases.

The examiner has further rejected, as being indefinite, appellants' characterization of rhenium as being a non-noble metal. We are persuaded by appellants' evidence in exhibit B that at least one authoritative source, The Condensed Chemical Dictionary, does not include rhenium among the noble metals. We further note that rhenium is not located in the same class as the noble metals in the "Periodic Table of the Elements."

Based upon the above considerations, we find that the examiner has failed to establish that one of ordinary skill in the art would not be apprised of the scope of the claims set forth above. Accordingly, the rejection of claims 1 and 4 through 27 under the second paragraph of 35 U.S.C. § 112 is reversed.

The examiner has also rejected claims 3, 19, 23 and 25 under the first paragraph of 35 U.S.C. § 112 for lack of enablement as there is no disclosure of non-noble metals. As discussed above, it is the examiner's position that rhenium is a noble metal. As no other non-noble metals are disclosed, the examiner concludes that in effect there is no disclosure

of non-noble metal. We disagree with the examiner's position. We previously found in the rejection under the second paragraph of § 112 that appellants have reasonable basis for stating that rhenium is not a noble metal. Hence, appellants properly conclude that rhenium constitutes a non-noble metal within the scope of the disclosed invention. Moreover, appellants have exemplified how to make and use the invention with rhenium. See specification pages 17 and 18. Since the specification disclosure contains a teaching of the process of making and using the invention, it must be taken as being in compliance with the first paragraph of 35 U.S.C. § 112. In re Marzocchi, 439 F.2d 220, 223, 169 USPQ 367, 369 (CCPA 1971). Based upon the above consideration, the examiner has not met her burden of showing lack of enablement. Accordingly, the rejection of claims 3, 19, 23 and 25 under the first paragraph of 35 U.S.C. § 112 is reversed.

B. The rejections under 35 U.S.C. § 102 (b)

In accordance with 37 CFR § 192(c)(5) (1994), with respect to each of the rejections under 35 U.S.C. § 102(b), the additive claims and the process claims will be separately considered with each set of said additive claims and each set

of process claims standing or falling together respectively, except with respect to the rejection over Robinson '483. Claim 16, as rejected under § 102 based on Robinson '483 shall also be considered separately. We have selected claims 1 and 23 as representative of the respective additive and process claims. See Brief pages 6 and 7, paragraphs numbered 4 through 7.

During patent prosecution, claims are to be given their broadest reasonable interpretation consistent with the specification, and the claim language is to be read in view of the specification as it would be interpreted by one of ordinary skill in the art. In re Zletz, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989); In re Sneed, 710 F.2d 1544, 1548, 218 USPQ 385, 388 (Fed. Cir. 1983); In re Okuzawa, 537 F.2d 545, 548, 190 USPQ 4564, 466 (CCPA 1976).

Our construction of the subject matter defined by appellants' claim 1 is that said claim requires a minimum of only one compound. The compound has certain required characteristics. It must be soluble in gasoline within the ranges set forth in the claimed subject matter. However, the presence of gasoline is not required. Moreover, the compound

must have a solubility within the range of the claimed subject matter or a solubility greater than the range set forth in the claimed subject matter provided only that it is soluble in an amount falling within the range of the claimed subject matter. The compound must be capable of being deposited downstream of a combustion chamber. However, this does not preclude the compound from also being deposited elsewhere such as in a combustion chamber. Finally, the compound must be capable of functioning as at least one compound of a three way metal catalyst, which catalyst effects the simultaneous oxidation of carbon monoxide, unburned hydrocarbons and reduction of nitrogen oxides. However, we find no requirement in the claimed subject matter before us that the compound necessarily perform all three catalytic functions. Accordingly, we will now consider the individual rejections under section 102(b).

We will sustain the rejection of claims 1, 4, 5, 7, 16, 23 and 27 as anticipated by Lyons under 35 U.S.C. § 102(b). Lyons is directed to a gasoline additive. See Demonstrations, page 3, column 1. The additive, an organo-metallic compound, is preferably soluble in the motor fuel, and effective catalytically in increasing the efficiency of the fuel

combustion, column 1, lines 48-51. We find the catalytic activity sufficient to meet the catalytic characteristics required for "at least one compound of a three way metal catalyst." The concentration of 0.001% disclosed by Lyons corresponds to 10 mg/l. Page 2, column 1, line 57 and page 2, column 2, line 57. We accordingly find that the concentration range taught by Lyons meets both the requirements of noble metals and non-noble metals alike. As to the deposition of the metal catalyst downstream, on the record before us, we see no reason to conclude that all or even most of the catalyst is deposited in the combustion chamber. We are in agreement with the examiner's position that gasoline additives are, "inherently entrained in emission fumes from the engine and are deposited on the catalytic vessel downstream." See Answer, page 10, lines 1-3. The same analysis applies to appellants' claim 23. Accordingly, we sustain the section 102(b) rejection over Lyons.

We next turn to the rejection of claims 1, 4 through 9, 16, 23 and 27 under 35 U.S.C. § 102(b) over Bowers '302. We shall likewise sustain the rejection of claims 1, 4 through 9, and 16 over the patent to Bowers. We shall not sustain the

rejection of claims 23 and 27. We find that Bowers teaches a fuel soluble additive of the platinum group metals, which compound, $H_2PtCl_6.6H_2O$ performs all the functions and has each of the characteristics required by the claimed subject matter. Appellants' principal argument in his Brief, page 17, (also see his specification, page 14) is that platinum hydrochloric acid hexahydrate is "too readily soluble in gasoline." As we interpret the claimed subject matter, it requires only that the "at least one compound" be directly soluble in gasoline in a concentration of 0.01 to 10 mg/l. Clearly $H_2PtCl_6.6H_2O$ is soluble in gasoline in these concentrations and we so find. The fact that it is more soluble than required by the concentration stated in the claimed subject is irrelevant to the issue at hand. We find that the aforesaid platinum hydrochloric acid hexahydrate, $H_2PtCl_6.6H_2O$, has all the requisite characteristics of the claimed subject matter. The record before us is devoid of any statement or findings by appellants that it would not meet the requirements of the claimed subject matter. These findings however are not applicable to claim 23. Bowers '302 does not teach a method

step of feeding the additive in gasoline to an internal combustion engine.

Based upon the foregoing evaluation of Bowers '302, it is our determination that the arguments and evidence for and against patentability of the claims on appeal over Bowers '302 result in a finding of anticipation for claims 1, 4 through 9 and 16. Accordingly, we sustain the section 102(b) rejection over Bowers '302 for claims 1, 4 through 9 and 16. We do not sustain the section 102(b) rejection for claims 23 and 27.

We shall sustain the rejection of claims 1, 4, 5, 16, 18, 23 and 27 as anticipated by Bowers '050. In our view the examiner has properly concluded that Bowers '050 anticipates the claimed subject matter. Notwithstanding appellants' argument that Bowers does not teach direct solubility in gasoline at extremely low concentrations, Brief, page 19, patentee teaches platinum group metal compounds which are "directly soluble in gasoline-based fuels," column 3, line 27. Moreover, the platinum group metal compound is present in an amount sufficient to supply 0.01 to 1.0 ppm of the platinum group metal to a predetermined amount of fuel, column 3, lines 39-43. This amount corresponds to 0.01 to 1.0 mg/l. We

further find that three way catalytic conversion is taught at column 4, lines 12-20. "The increased output per unit of gasoline burned," necessarily results from a reduction of unburned or partially burned fuel. Hence one obtains a reduction in the emission of particulates. The catalytic effect on carbon monoxide and nitrogen monoxide are likewise taught. See column 4, lines 16-17. Furthermore Bowers' use of an internal combustion engine results in meeting the requirements of the subject matter of claim 23. See Example 1. Based upon the above considerations the 102(b) rejection over Bowers '050 is sustained.

We next consider the rejection of claims 1, 4 through 12, 14, 16 and 23 as anticipated by Robinson '483 under 35 U.S.C. § 102(b). We shall likewise sustain this rejection. Patentee discloses a gasoline additive in the appropriate concentration of 9 p.p.m., corresponding to 9 mg/l, column 5, line 38, using alkali metal perrhenates including potassium and rubidium salts. We find that this concentration meets the claimed requirement of, "about 10 mg/l." See Titanium Metals Corp. of America v. Banner, 778 F.2d 775, 783, 227 USPQ 773, 779 (Fed. Cir. 1985). Catalytic activity within the meaning of the

claimed subject matter is clearly disclosed by patentee at column 6, lines 36-45. Appellants argue that the catalysts are carried in the air into the combustion chamber and thus are not even gasoline additives. See Brief, pages 21-22. Appellants' arguments are unpersuasive. Claim 1 requires only a gasoline additive. When the gasoline and additive are mixed, or even if they are mixed, is irrelevant to the "gasoline additive" claimed subject matter. As for claims 16 and 23, we find that the disclosure at column 6, lines 23-26, which mixes the air, fuel and catalyst in the manifold to produce a homogenous blend of the catalyst with the fuel and air, meets both the requirements of the fuel composition of claim 16 and the limitation of "dissolving at least a portion of said additive in gasoline" and "feeding the gasoline having said additive dissolved therein to the internal combustion engine," as required by claim 23.[3] Based upon these findings,

[3] Hackh's Chemical Dictionary, defines solution as,"the mixing of a solid, liquid or gaseous substance (solute) with a liquid (the solvent), forming a homogenous mixture...." Julius Grant ed., McGraw-Hill Book Company, New York, fourth edition, page 624, 1972.

the rejection of the claims under 35 U.S.C. § 102(b) over Robinson is sustained.

C. The Rejections under 103

Claims 1 and 4 through 14, 16, 18 through 21, 23 through 25 and 27 stand rejected under 35 U.S.C. § 103 as being unpatentable over Bowers '050, in view of Henk, Robinson '483, Robinson '017, Reinhard and Baird. We shall sustain this rejection. Appellants have stated in the Brief, page 7, that the above claims stand together on the issue of obviousness, and we have previously affirmed the § 102 rejection of independent claims 1 and 23 as being anticipated by Bowers, '050. It is well settled that the ultimate obviousness is lack of novelty. The claims cannot have been anticipated and not have been obvious. In re Fracalossi, 681 F.2d 792, 794, 215 USPQ 569, 571 (CCPA 1982). Accordingly, there is no further need to inquire into the disclosure of any of the secondary references combined with Bowers. Based upon the above considerations, the rejection of claims 1, 4 through 14, 16, 18 through 21, 23 through 25 and 27 are affirmed under section 103.

DECISION

The rejection of claims 1 and 4 through 27 under the second paragraph of 35 U.S.C. § 112 is reversed.

The rejection of 3, 19, 23 and 25 under the first paragraph of 35 U.S.C. § 112 is reversed.

The rejection of claims 1, 4, 5, 7, 16, 23 and 27 under 35 U.S.C. § 102(b) as being clearly anticipated by Lyons is affirmed.

The rejection of claims 1, 4 through 9 and 16 under 35 U.S.C. § 102(b) as being anticipated by Bowers ‘302 is affirmed. The rejection of claims 23 and 27 under 35 U.S.C. § 102(b) as being anticipated by Bowers ‘302 is reversed.

The rejection of claims 1, 4, 5, 16, 18, 23 and 27 under 35 U.S.C. § 102(b) as being clearly anticipated by Bowers ‘050 is affirmed.

The rejection of claims 1, 4 through 12, 14, 16, and 23 under 35 U.S.C. § 102(b) as being clearly anticipated by Robinson ‘483 is affirmed.

The rejection of claims 1, 4 through 14, 16, 18 through 21, 23 through 25 and 27 under 35 U.S.C. § 103 as being

unpatentable over Bowers ‘050, in view of Henk, Robinson ‘483, Robinson ‘017, Reinhard and Baird is affirmed.

Accordingly, the decision of the examiner is affirmed-in-part.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

BRADLEY R. GARRIS Administrative Patent Judge	)	
TERRY J. OWENS Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
PAUL LIEBERMAN Administrative Patent Judge	)	

bae

Appeal No. 96-0088
Application No. 08/038,426

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